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SOURCE Medycyna Weterynaryjna, Vol VI, No 12, 1950.THE IMPORTANCE OF TECHNOLOGY IN THE POLISH MEAT INDUSTRY

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The technology of meat dressing and processing is most highly developed in the USSR. The development of this branch of science and its practical application leaves much to be desired in the nations of Europe, both in the people's democracies and in the nations of the west. Czechoslovakia and Germany are in a relatively better position as far as meat technology is concerned. In Poland, the technology of meat and meat products is a young science which received no significant attention until the creation of People's Poland. The development of technology is contingent on the establishment of a technological institute on the model of the Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Myasnoy Promyshlennosti (All-Union Scientific Research Institute of the Meat Industry) in Moscow. This institute would formulate research methods, practical standards for dressing and processing meat, and the methods of utilizing by-products.

Slaughtering techniques should be humanitarian and economical. The first requirement is met by rendering the animal unconscious to the slaughtering act. The second requirement necessitates drainage of the blood as quickly as possible to prevent souring of the carcass; this makes the carcass resistant to decay for a certain period of time. In Poland, the Schermer device is used to stun cattle and an electric-shock device is used in slaughtering hogs. In the USSR, cattle are also stunned by an electric-shock device.

The animal hides are valuable raw materials for the tanning industry and are stripped from the slaughtered animals. These hides should be of good quality and without the slightest damage. This is possible with the aid of a special apparatus for stripping both cattle and swine. The animals should be subjected to baths immediately before slaughter to yield hides in a clean state. Damage to the hides can result from mechanical faults and improper handling of the animals before and after slaughter. Damage can also be caused by diseases resulting from the presence of fungi, the bovine gadfly, lice, ticks, and the acarus. It is an important prerequisite to prevent such damage.

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Carcass processing should be mechanized. In the USSR, a conveyer-belt system is used. This system guarantees minimum damage to the organs and carcass and maximum efficiency in labor.

The technology of meat processing in Poland is mainly concerned with methods of preparing meat for canning, and the preparation and canning of bacon, ham, and other meat products for export. Preparation of canned meats involves proper selection, butchering, quality of metal cans, packing, and sterilization. The meat used in canning must come from completely healthy animals. The animals must be at least moderately fattened and must not be fed for at least 16 hours before slaughter. The carcass must be kept in a refrigerated state. If meat for canning is derived from freshly slaughtered animals, sour fermentation often results, making the canned meat unfit for consumption. Processing techniques involve the hermetic sealing of filled cans, the sterilization, sorting, and elimination of nonhermetically sealed cans, the retention of cans in temperature-control ovens for at least 3 days, packaging, labeling, storing, and segregation of rejects because of swelling of cans.

Special attention is given to the physical and chemical reactions occurring in the canned meats during the sterilization process, including the breakdown of the protein cells through the action of ammonia and hydrogen sulfide, produced at certain temperatures or by certain sterilization methods. Microorganisms resistant to temperatures up to plus 130 degrees may be present and destroy protein cells of the meat by producing ammonia, nitrogen, and hydrogen sulfide. The swollen top or bottom of the can caused by the expansion of gases may indicate the presence of the bacillus botulismus, whose toxins, produced under anaerobic conditions, are very dangerous to man. Besides gaseous swelling caused by the bacteria, physical swelling (increased circumference of the cans as a result of high or low temperature acting on cans which have been overfilled) and chemical swelling (resulting from corrosion of the metal in the cans containing an admixture of iron, from the action of acids produced in the meat) also occur.

Bacon production begins with the feeding of hogs with food rich in proteins to obtain firm meat with a thick layer of good-quality fatback. The processing requires the removal of the spinal column, shoulders, rib ends, and pelvic bones, leaving the thigh bones and hip bones.

Canned boneless hams require a special salting process called the Bieser method. From 20 to 25 grams of powdered gelatin is added for each can. Swelling of the cans is often caused by mycetozotic bacteria when the ham is stored too long while draining.

The utilization of by-products is a very important factor. This field is not properly developed in Poland, since slaughtering is not concentrated in industrial slaughterhouses, but in custom slaughterhouses, which possess neither the technical equipment nor the specialized personnel for processing by-products. The more important by-products include the entrails of cattle and hogs used for sausage casings, and the entrails of sheep used to manufacture catgut and cord. Pepsin is manufactured from the mucous membranes of the entrails, and peptone is made from the stomachs of hogs. Cattle rumina are used in the food-processing industry.

Blood is processed for industrial and medicinal uses. Dried blood is the source of a meal rich in nutritional value which is added to feed for animals, especially swine and fowl. It is used in pharmaceuticals (such as hematogen) albumins for the manufacture of glues for plywood and veneers, and mordants for the textile industry. Blood is also used for meat products. It is also used in a crystalline or powdered form by the confectionery industry in the manufacture of jellies and pastry.

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The bones yield industrial fats, glue, and bone meal. The bone fats yield olein, stearin, and glycerin. In the meat combines of the USSR a fine industrial lubricant is obtained for aircraft engines through radium radiation.

Hooves and horns are made into combs, buttons, spoons, handles for canes and parasols, etc. Corneous meal is used in gardening and for certain food substitutes. The lips, snout, and ears contain glue and elastin. The hair from cattle and swine is used to make artists' paint brushes. Hog bristles are cleaned, dried, and sorted by machine, and used in the manufacture of brushes. Hair from cattle and horses is important for the upholstering and tailoring industries. The endocrine glands are used by the pharmaceutical industry in the manufacture of biologicals. In the meat combines of the USSR, even the contents of the rumen are processed into insulation boards.

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